

From the INTERNATIONAL BUREAU

**PCT**

NOTIFICATION CONCERNING  
TRANSMITTAL OF COPY OF INTERNATIONAL  
PRELIMINARY REPORT ON PATENTABILITY  
(CHAPTER I OF THE PATENT COOPERATION  
TREATY)

(PCT Rule 44bis.1(c))

To:

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Applicant's or agent's file reference  
APLE.P0057PCT

**IMPORTANT NOTICE**

International application No.  
PCT/US2004/015032

International filing date (*day/month/year*)  
13 May 2004 (13.05.2004)

Priority date (*day/month/year*)  
09 September 2003 (09.09.2003)

Applicant  
APPLE COMPUTER, INC.

The International Bureau transmits herewith a copy of the international preliminary report on patentability (Chapter I of the Patent Cooperation Treaty)

The International Bureau of WIPO  
34, chemin des Colombettes  
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Authorized officer

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# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference APLE.P0057PCT	<b>FOR FURTHER ACTION</b>	See item 4 below
International application No. PCT/US2004/015032	International filing date ( <i>day/month/year</i> ) 13 May 2004 (13.05.2004)	Priority date ( <i>day/month/year</i> ) 09 September 2003 (09.09.2003)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant APPLE COMPUTER, INC.		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).

2. This REPORT consists of a total of 10 sheets, including this cover sheet.

In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

- |                                     |              |   |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I    | Basis of the report   |
| <input checked="" type="checkbox"/> | Box No. II   | Priority  |
| <input type="checkbox"/>            | Box No. III  | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |
| <input checked="" type="checkbox"/> | Box No. IV   | Lack of unity of invention  |
| <input checked="" type="checkbox"/> | Box No. V    | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input checked="" type="checkbox"/> | Box No. VI   | Certain documents cited   |
| <input type="checkbox"/>            | Box No. VII  | Certain defects in the international application  |
| <input type="checkbox"/>            | Box No. VIII | Certain observations on the international application   |

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).

	Date of issuance of this report 13 March 2006 (13.03.2006)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer  Yolaine Cussac
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# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

12/3

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REC'D 10 JAN 2005

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To:

see form PCT/ISA/220

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/US2004/015032

International filing date (day/month/year)  
13.05.2004

Priority date (day/month/year)  
09.09.2003

International Patent Classification (IPC) or both national classification and IPC  
H04N7/26

Applicant  
APPLE COMPUTER, INC.

### 1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

### 3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office - Gitschiner Str. 103  
D-10958 Berlin  
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Authorized Officer

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Telephone No. +49 30 25901-442



**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US2004/015032

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**Box No. I Basis of the opinion**

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1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US2004/015032

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**Box No. II Priority**

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1. ☒ The following document has not been furnished:

- ☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).
- ☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. ☐ It has not been possible to consider the validity of the priority claim because a copy of the priority document was not available to the ISA at the time that the search was conducted (Rule 17.1). This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

4. Additional observations, if necessary:

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**Box No. IV Lack of unity of invention**

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1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:

- ☒ paid additional fees.
- ☐ paid additional fees under protest.
- ☐ not paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is

- ☐ complied with
- ☒ not complied with for the following reasons:

**see separate sheet**

4. Consequently, this report has been established in respect of the following parts of the international application:

- ☒ all parts.
- ☐ the parts relating to claims Nos.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/US2004/015032

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**Box No. V** Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

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1. Statement

Novelty (N)	Yes: Claims	7-14,17,25-28,30
	No: Claims	1-6,15,16,18-24,29
Inventive step (IS)	Yes: Claims	
	No: Claims	1-30
Industrial applicability (IA)	Yes: Claims	1-30
	No: Claims	

2. Citations and explanations

**see separate sheet**

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**Box No. VI** Certain documents cited

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1. Certain published documents (Rules 43*bis*.1 and 70.10)

and /or

2. Non-written disclosures (Rules 43*bis*.1 and 70.9)

**see form 210**

**Re Item IV.**

The separate inventions are:

Claims 1-14, 21-28

A method of processing a video sequence to determine a number of subsequent bidirectional motion compensated frames to be encoded in a set of successive frames.

Claims 15-20, 29, 30

A method of detecting scene cuts in a video sequence.

They are not so linked as to form a single general inventive concept (Rule 13.1 PCT) for the following reasons:

The prior art has been identified as document

"A NOVEL PAIR-WISE COMPARISON BASED ANALYTICAL FRAMEWORK FOR AUTOMATIC MEASUREMENT OF INTENSITY OF MOTION ACTIVITY OF VIDEO SEGMENTS", Peker K A and Divakaran A, 22.08.2001, XP010661942, which discloses:

A method of processing a video sequence comprised of a plurality of frames, the method comprising:

- computing motion vectors for the plurality of frames (page 937, section 3., lines 1-3; the employment of block motion vectors directly implies that they have been computed);
- determining a motion cost value for each of the frames (page 937, section 3., lines 3-10); and
- determining a derived cost value based on the motion cost value for each of the frames (for example if the average of motion vector magnitudes is used as motion cost value, then the variance of motion vector magnitudes would be a derived cost value).

It follows that the following technical feature of claim 1 makes a contribution over the prior art and can be considered as a special technical feature within the meaning of Rule 13.2 PCT:

- determining the number of B-frames to be encoded in the set of successive frames based on the derived cost value.

The problem solved by this special technical feature can therefore be construed as:

"a way to determine the number of B-frames to be encoded in a set of successive frames".

The following technical features of claim 15 make a contribution over the prior art and can be considered as special technical features within the meaning of Rule 13.2 PCT:

- determining a ratio between the motion cost value of a first frame and the motion cost value of a second frame; and
- determining if there is a scene cut between the first frame and the second frame based on the ratio.

The problem solved by these special technical features can therefore be construed as: "a way to determine if there is a scene cut between two frames".

Also, examining the possible correspondence by technical effect, one finds that the technical effect of the first invention is the determination of the number of B-frames to be encoded in a set of successive frames and that the technical effect of the second invention is the detection of a scene cut between two frames.

This appears to show lack of corresponding technical effect as well. Consequently, neither the objective problem underlying the subjects of the claimed inventions, nor their solutions defined by the special technical features allow for a relationship to be established between the said inventions, which involves a single general inventive concept.

In conclusion, the groups of claims are not linked by common or corresponding special technical features and define 2 different inventions not linked by a single general inventive concept.

The application, hence does not meet the requirements of unity of invention as defined in Rules 13.1 and 13.2 PCT.



Re Item V.

1. The following document is referred to in this communication:

J D1: EP 0 987 903 A (THOMSON MULTIMEDIA SA) 22 March 2000 (2000-03-22)  
✓ D2: US 2002/146071 A1 (LIU MING-CHANG ET AL) 10 October 2002 (2002-10-10)

2. INDEPENDENT CLAIM 1

- 2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.
- 2.2 Document D1 discloses (the references in parenthesis applying to this document; an obvious typographical error should be noted: on page 3, equation 2, replace  $N=$  by  $M=$ ):

A method of processing a video sequence comprised of a plurality of frames (abstract) to determine a number of bidirectional motion compensated frames to be encoded in a set of successive frames in the plurality of frames (page 5, lines 21-22), the method comprising:

- a) computing motion vectors for at least one frame in the set of successive frames (page 3, line 12; test coding corresponding to MPEG2 implies the computation of motion vectors);
  - b) determining a motion cost value for at least one frame in the set of successive frames (paragraph 21, "Bcost");
  - c) determining a derived cost value based on the motion cost value for at least one frame in the set of successive frames (page 3, equation 2); and
  - d) determining the number of B-frames to be encoded in the set of successive frames based on the derived cost value (the number M in paragraphs 25 and 30).
- 2.3 Therefore, the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.
3. DEPENDENT CLAIMS 2-14

3.1 Dependent claims 2-14 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT).

3.2 Claim 8 has been drafted as independent claim. However, claim 8 is a dependent claim according to Rule 6.4 PCT, because it includes all the features of claim 1.

#### 4. INDEPENDENT CLAIM 15

4.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 15 is not new in the sense of Article 33(2) PCT.

4.2 Document D2 discloses:

A method of detecting scene cuts in a video sequence comprised of a plurality of frames, the method comprising

a) computing motion vectors for a first frame and a second frame in the plurality of frames (§[0164], the two sets of motion vectors are  $V_{f0 \rightarrow f1}$  and  $V_{f1 \rightarrow f2}$ );

b) determining a motion cost value for the first frame (§[0164],  $\sum |V_{f0 \rightarrow f1}|_c + \varepsilon$ , where  $\varepsilon$  is a small positive number for avoiding division with zero) and the second frame (§[0164],  $\sum |V_{f1 \rightarrow f2}|_c + \varepsilon$ );

c) determining a ratio between the motion cost value of the first frame and the motion cost value of the second frame (§[0164], last line); and

d) determining if there is a scene cut between the first frame and the second frame based on the ratio (§[0164], last line; a scene change is detected when the inequality is true).

Therefore, the subject-matter of claim 15 is not new.

#### 5. DEPENDENT CLAIMS 16-20

5.1 Dependent claims 16-20 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT).

#### 6. INDEPENDENT CLAIM 21

- 6.1 Claim 21 discloses a computer program corresponding to the method of claim 1. Since the method of claim 1 is not new in the sense of Article 33(2) PCT, the subject-matter of claim 21 is also not new in the sense of Article 33(2) PCT.

7. DEPENDENT CLAIMS 22-28

- 7.1 Dependent claims 22-28 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT).

- 7.2 Claim 25 has been drafted as independent claim. However, claim 25 is a dependent claim according to Rule 6.4 PCT, because it includes all the features of claim 21.

8. INDEPENDENT CLAIM 29

- 8.1 Claim 29 discloses a computer program corresponding to the method of claim 15. Since the method of claim 15 is not new in the sense of Article 33(2) PCT, the subject-matter of claim 29 is also not new in the sense of Article 33(2) PCT.

9. DEPENDENT CLAIM 30

- 9.1 Dependent claim 30 does not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step (Article 33(3) PCT).